Remarks

Claims 1-7, 10, 13, 15 and 17-27 are currently pending in this application. Claims 13 and 25 are amended to correct grammar.

Claims 1-7, 10, 13, 15, and 17-27 were rejected under 35 USC 101.

The Applicant traverses these rejections. In making these rejections, the Examiner states "[t]he claims are directed to nothing more than an algorithm, failing to indicate how the invention accomplishes a practical application." The Examiner also admits "Applicant's specification indicates that the reduction or deferral of rebalancing a data structure, including minimizing or eliminating locking the data structure, may be beneficial for improving performance during a database rebalance/update (pg. 3)," but further states "[h]owever, the claims remain non-statutory because they are devoid of any such practical applications and merely recite an algorithm."

The standard for rejection under 35 USC 101 is characterized by the MPEP as follows:

> [o]ffice personnel have the burden to establish a prima facie case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or does not produce a useful result. Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 U.S.C. 101. ... Further when such a rejection is made, Office personnel must expressly state how the language of the claims has been interpreted to support the rejection. (§ 2106.II.A)

The Applicant is unable to identify any mention in the current Office Action of "how the language of the claims has been interpreted to support the rejection," as required by MPEP § 2106.II.A. The Applicant, therefore, requests that the Examiner provide such express statement for each claim or withdraw the rejections under § 101.

Claim 1 recites:

1. (Previously Presented) A method of reducing the number of times a tree data structure is rebalanced comprising the steps of:
a) allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches a threshold greater than one; and
b) rebalancing the tree data structure when the threshold is reached.

It is the Applicant's position that the elements of Claim 1 produce a useful result and Claim 1 is, therefore, directed toward statutory subject matter. Further, as Claim 1 is directed toward statutory subject matter the rejection under § 101 of Claim 1, and those claims that depend therefrom, should be withdrawn.

As admitted by the Examiner, reduction or deferral of rebalancing a data structure is beneficial for improving performance during a database rebalance/update. Therefore, a claim whose limitations lead to a reduction or deferral of rebalancing would be directed toward statutory subject matter.

As is discussed further below, the specification as filed teaches that the limitations of Claim 1 are directed toward a reduction or deferral of rebalancing and, thus, toward statutory subject matter. Specifically, FIG. 8 and paragraph 52 are, among other parts of the specification, directed to the subject matter of Claim 1. FIG. 8 "is a flow chart illustrating a method of deferred balancing of a tree data structure according to one embodiment of the invention," (pg. 8 lines 8-10, in the specification as filed). Paragraph 52 of the application as filed teaches that the method of FIG. 8 is a method

> by which the unbalanced portion of tree data structure 700 is allowed to grow unbalanced until a leaf 730 is inserted at the threshold level of tree data structure 700. After this insertion occurs, the entire tree data structure 700 is rebalanced. By delaying the rebalancing, and allowing unbalanced sub-trees of length greater than one, the number of times the tree data structure 700 is rebalanced is reduced.

This text teaches limitations of the claim element "*allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches a threshold*," (e.g., "the unbalanced portion of tree data structure 700 is allowed to grow unbalanced until a leaf 730 is inserted at the threshold level of tree data structure 700"). This text also teaches limitations of the claim element "*rebalancing the tree data structure when the threshold is reached*," (e.g. "[a]fter this insertion occurs, the entire tree data structure 700 is rebalanced"). The specification, therefore, teaches that the claim elements "*allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches a threshold ... ; and ... rebalancing the tree data structure when the threshold is reached*" are steps in a method of deferring balancing of a tree data structure.

As admitted by the Examiner, deferred balancing of a tree data structure is statutory subject matter. Therefore, Claim 1 and those claims that depend therefrom meet the requirements of § 101 and the Applicant requests that the Examiner withdraw the rejections under § 101 of Claim 1, and Claims 2-4 which depend therefrom.

Claim 5 recites:

5. (Previously Presented) A method of deferring the rebalancing of a tree data structure comprising the steps of:
(a) allowing a sub-tree of the tree data structure to grow to an unbalanced length greater than one; and
(b) rebalancing the tree data structure when the unbalanced length of the sub-tree reaches a threshold level.

Claim 5 includes limitations similar to those of Claim 1. As discussed above, these limitations are directed toward subject matter that the Examiner had admitted is statutory. The Applicant, therefore, requests that the Examiner withdraw the rejections under § 101 of Claim 5, and Claims 6 and 7 which depend therefrom.

Claim 10 recites:

10. (Original) A method of performing a rebalancing operation upon a tree data structure comprising the steps of:
(a) allowing a sub-tree of the tree data structure to grow unbalanced to a threshold level greater than one;
(b) developing, in the case where the sub-tree reaches the threshold level, first and second sets of rebalancing operation tasks, the first and second set of rebalancing operation tasks operable to effect a first and second set of element state transitions respectively;
(c) performing the first set of operation tasks in a first phase; and
(d) performing the second set of operation tasks in a second phase.

It is the Applicant's position that the elements of Claim 10 produce a useful result and Claim 10 is, therefore, directed toward statutory subject matter. Further, as Claim 10 is directed toward statutory subject matter, the rejection under § 101 of Claim 10 and those claims that depend therefrom should be withdrawn.

As admitted by the Examiner, rebalancing a data structure is beneficial for improving performance. Therefore, a claim whose limitations lead to rebalancing would be directed toward statutory subject matter.

FIGs. 1, 5, 6 and 8, among other parts of the specification, teach the limitations of Claim 10. Specifically, they teach allowing a sub-tree of the tree data structure to grow (e.g., FIGs. 1 and 8), developing first and second sets of rebalancing operation tasks (e.g., FIGs. 1, 5 and 6), and performing the sets of operation tasks in the first phase and the second phase (e.g., FIGs. 1 and 6). As pointed out in paragraph [0013] of the application as filed, "[i]t has been found that the process 100 [of FIG. 1] operates to improve the efficiency of the computing system." Thus, the process of FIG. 1, which teaches limitations of Claim 10, achieves a "useful, concrete, and tangible result" as required by *State Street Bank & Trust Co.*

The specification further states, in reference to some embodiments of the processes illustrated by FIG. 1:

> In the case where relatively few operations are received in step 110, then the process 100 [of FIG. 1] achieves improved responsiveness. If on the other hand, a relatively large amount of operations are received in step 110, then the process 100 achieves improved efficiency by reducing the number of times the process 100 switches between the update phase of step 130 and the commit phase of step 140. (Paragraph 13)

Again, this statement specifically teaches a "useful, concrete, and tangible result" achieved by the process of FIG. 1 and advanced by limitations of Claim 10.

For at least the above reasons, Claim 10 is directed toward statutory subject matter, and the rejection under § 101 of Claim 10 and those claims that depend therefrom should be withdrawn.

Claim 13 recites:

> *13. (Currently Amended) A system for deferring the rebalancing of a tree data structure comprising:*
> *(a) a memory for storing the tree data structure; and*
> *(b) a processor coupled to the memory, the processor operable to track the performance of operations upon the tree data structure and rebalance the tree data structure when a number of unbalanced levels within a sub-tree of the tree data structure reaches a threshold greater than one.*

In rejecting Claim 13 under § 101 the Examiner states, "[t]he claims [including Claim 13] are directed to nothing more than an algorithm, failing to indicate how the invention accomplishes a practical application" and that the claims full under the judicial exception of an 'abstract idea.' " The Applicant respectfully points out that Claim 13 is directed toward "*a system ... comprising: a memory ... and a processor.*" This subject matter includes physical devices and is, thus, neither "an algorithm" nor an "abstract idea" as characterized by the Examiner. The Applicant respectfully requests that the Examiner fully explain how "*a system ... comprising: a memory ... and a processor*" can

be characterized as "nothing more than an algorithm" and an "abstract idea," or withdraw the rejection under § 101.

Claim 15 recites:

15. (Previously Presented) A system comprising:
means for storing a tree data structure;
means for tracking the execution of operations upon the tree data structure; and
means for rebalancing the tree data structure when an unbalanced sub-tree of the tree data structure reaches a threshold level greater than one, the rebalancing including a first rebalancing phase in which rebalancing operations are executed in parallel and nodes of the unbalanced sub-tree are unlocked, and a second rebalancing phase in which different rebalancing operations are executed.

As with Claim 13, Claim 15 is directed toward a physical "*system*" including physical devices, e.g., "*means for.*" The Applicant respectfully requests that the Examiner fully explain how these physical devices can be characterized as "nothing more than an algorithm" and an "abstract idea," or withdraw the rejection under § 101.

Regarding Independent Claims 17, 18, 19, 22, 25, and 27:

As with Claims 1, 10 and 17, these method claims include limitations taught by at least FIGs. 1, 5, 6, and 8, and associated text of the specification as filed. As pointed out herein with respect to Claims 1, 10 and 17, the specification points out specific "useful, concrete, and tangible results" achieved through these limitations. It is, therefore, the Applicant's position that the rejections under § 101 of Claims 17, 18, 19, 22, 25 and 27, and those claims that depend therefrom, should be withdrawn for at least the same reasons as discussed with respect to Claims 1, 10 and 17.

Further, as discussed above, the Examiner admits that rebalancing of a data structure "may be beneficial for improving performance during a database rebalance/update" and states "the claims remain non-statutory because they are devoid of

any such practical applications and merely recite an algorithm." The Applicant specifically traverses this statement with respect to Claims 17, 18, 19, 22, 25, 27 and those claims that depend therefrom.

Contrary to the Examiner's statement, each of these claims specifically include limitations directed toward rebalancing of a tree data structure. For example, Claims 17 and 18 each recite the limitations "*rebalancing the tree data structure when an unbalanced sub-tree of the tree data structure reaches a threshold level greater than one*," among other limitations. Claim 19 recites the limitations "*developing a first set of rebalancing operations tasks*," "*developing a second set of rebalancing operation tasks*," "*execution of the first set of rebalancing operation tasks*," and "*executing the second set of rebalancing operation tasks*," among other limitations. Claim 22 recites the limitations "*executing a first set of rebalancing operations*" and "*executing a second set of rebalancing operation tasks*," among other limitations. Claim 25 recites, "*performing a first set of rebalancing operation tasks*" and "*performing a second set of rebalancing operation tasks*," among other limitations. Claim 27 recites, "*rebalancing the tree data structure when an unbalanced sub-tree of the tree data structure reaches a threshold level greater than one*," among other limitations. Thus, each of these claims includes at least the above limitations directed at subject matter that the Examiner has admitted "may be beneficial." Because these claims included limitations directed at an admitted "beneficial" result," they produce a "useful, concrete and tangible result" and meet the requirements of § 101. For at least these reasons, the Applicant requests that the Examiner withdraw the rejections under § 101 of these claims and those claims that depend therefrom.

Claims 1-7, 10, 13, and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Walker ("Self-Balancing Binary Search Tree").

Regarding Claim 1,

Claim 1 recites:

1. (Previously Presented) A method of reducing the number of times a tree data structure is rebalanced comprising the steps of:

(a) allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches a threshold greater than one; and

(b) rebalancing the tree data structure when the threshold is reached.

In rejecting Claim 1, the Examiner states "Walker teaches ... allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches a threshold greater than one." The Applicant traverses this statement.

First, Walker specifically teaches:

> when an insert or remove happens, such that the tree's global order is maintained the tree automatically reacts to bring itself into balance. At this time the state of balance is defined to be when all nodes in the tree have **no more than a difference of 1** between the number of nodes in their left and right sub trees," (emphasis added, first full paragraph of "Balancing" section).

Having no more than a difference of one between the number of nodes in their left and right sub trees implies that the number of unbalanced levels are no greater than one. Thus, contrary to the Examiner's statement, Walker specifically teaches that rebalancing occurs whenever "an insert or remove happens" and, thus, rebalancing "automatically" occurs to **prevent** the number of unbalanced levels from reaching a threshold greater than one. This teaching of Walker is in direct contradiction to the limitations of Claim 1, which includes "*allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches* ***a threshold greater than one***." Thus, Walker teaches away from the limitations of Claim 1. The Applicant, therefore, requests that the Examiner

explain how Walker teaches "*allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches a threshold greater than one*," or allow Claim 1 and those claims that depend therefrom.

Second, the Examiner states "Walker does not explicitly teach rebalancing the tree once the threshold level is reached." The Examiner's statement appears to be contradictory to the teachings of Walker cited above. Specifically, Walker teaches automatic rebalancing whenever an "insert or remove happens," e.g., at a threshold level of one. A threshold level of one is contradictory to "*a threshold greater than one.*" Walker, therefore, does not teach the limitations of Claim 1, which include "*allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches* ***a threshold greater than one.***" For at least these reasons, the Applicant requests that Claim 1 and those claims that depend therefrom be allowed.

Third, the Examiner states "Walker suggests that the decision as to when the rebalancing operation should be triggered is an implementation detail to be decided on a strategic basis (pg. 4, 'A balancing strategy would simply be a strategy used to decide when to perform a shift')." The Applicant traverses the Examiner's interpretation of this text. The cited text does not teach that determining when to rebalance is simple or an implementation detail, rather the cited text states that the *term* "balancing strategy" can be simply defined, e.g., as "a strategy used to decide when to perform a shift." While a definition of what a balancing strategy is may be simple, this does not necessarily mean that the strategy itself is simple. As such, the determination of a balancing strategy may be more than a mere "implementation detail" as suggested by the Examiner.

Walker does give an example of a possible balancing strategy in the sentences following the text cited by the Examiner. Specifically, Walker teaches, "a strategy could be written which defined balanced such that the total tree could **not have a difference of more than one** between its maximum and minimum depth," (emphasis added). This is a teaching of a threshold of one and explicitly teaches away from "*allowing a sub-tree of the tree data structure to grow until a number of unbalanced levels reaches* ***a threshold greater than one,***" (emphasis added) as recited in Claim 1. The limits "no more than one" and "*greater than one*" are mutually exclusive. Thus, as noted elsewhere herein, the teachings of Walker teach away from rather than anticipate the limitations of Claim 1. For at least these reasons, it is the position of the Applicant that Claim 1 and those claims that depend therefrom are allowable.

Fourth, the Examiner states:

> [t]he main teachings are how to go about performing the rebalancing, wherein the details of when to shift are 'trivial' and open to any number of strategies. One strategy would rebalance when the difference in nodes in the left and right subtrees is two or more; another would rebalance when the difference of the maximum and minimum depth of subtrees is two or more.

These statements appear to be mere speculation on the part of the Examiner and unsupported by the cited art. While Walker does state that "[a] balancing strategy would simply be a strategy used to decide when to perform a shift at a node and what direction to shift. It should be trivial to implement this system," the use of the term "trivial" in this text is used to characterize implementation (e.g., writing software code) of a system, and not to characterize how to decide on a balancing strategy involving more than one unbalanced level as suggested by the Examiner. The Applicant, therefore requests that

the Examiner cite teachings within Walker to support these statements, or allow Claim 1 and those claims that depend therefrom.

Fifth, the Examiner states:

> it would have been obvious to a person having ordinary skill in the art that the number of rebalance operations should be reduced as much as possible. This is exemplified by the disclosure in Wikipedia regarding balanced binary search trees, ... which indicates the importance of keeping the height of a tree within a factor of the lower bound of the tree, which is based on the number of nodes.

It is the position of the Applicant that the teaching cited in this statement is inconsistent with the conclusion made by the Examiner. The Examiner cites a teaching that the height of a tree be kept to a minimum. This teaching would suggest rebalancing as often as possible, e.g., with a minimum threshold level of one and, thus, teaches away from the limitations of Claim 1, which specifically recites a threshold greater than one. The Examiner's conclusion that "the number of rebalance operations should be reduced as much as possible" cannot be supported by a teaching that rebalancing should occur as often as possible. According to the Examiner's position, rebalancing operations should be rare events. This would result in a maximized rather than a minimized tree height and is, thus, contradictory to the cited teachings within Wikipedia.

It appears that the Examiner intends the above statement to include a motivation to modify the teachings of Walker with the suggestions of the Examiner. However, as pointed out above, the Examiner's conclusions are inconsistent with the cited teachings. The disclosure within Wikipedia is consistent with Walker in that they suggest and teach, respectively, that rebalancing should occur as often as possible. Thus, the disclosure of Wikipedia does not provide a motivation to modify Walker, particularly in a manner, as suggested by the Examiner, that would be contrary to the disclosure within Wikipedia. It

is, therefore, the position of the Applicant that the Examiner has failed to provide a motivation to modify Walker as required to establish a *prima facie* case for the rejection of Claim 1 under § 103.

The Applicant notes that the disclosure in Wikipedia appears to have been originally published approximately two years after the filing date of the present application. As such, the use of this disclosure to determine the state of the art at the time of invention is improper.

For at least these reasons, it is the position of the Applicant that Claim 1 and those claims that depend therefrom are allowable.

Regarding Claim 2,

Claim 2 recites:

2. (Previously Presented) The method of claim 1 wherein the threshold is log_2n for a tree data structure having about n nodes.

In rejecting Claim 2, the Examiner states "Walker teaches ... wherein the threshold is log_2n for a tree data structure having about n nodes ... (pg. 4, this is inherently the trigger for a rebalance, as the difference in subtrees will be greater than one when the node is inserted at a certain depth of the tree)." The Applicant traverses this statement.

The Examiner appears to agree with the Applicant that the use of a log_2n threshold is not explicitly taught in the cited art. However, the Examiner suggests that log_2n is "inherently the trigger for a rebalance." The Applicant respectfully points out that the use of inherency in a rejection under § 103 is limited by the MPEP and established case law. Specifically, MPEP §2112 provides that "[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish

the inherency of that result or characteristic" citing In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). In the present rejection, the fact that Walker "may" use a threshold of "$log_2 n$" is insufficient to establish the inherency of this particular limitation within Walker. Rather, as discussed elsewhere herein, Walker teaches the use of a threshold of no more than one, which is different from "$log_2 n$."

Further, MPEP §2112 states that "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art" citing Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). The Applicant is unable to identify and such "basis in fact or technical reasoning" in the Examiner's statements. A threshold of "$log_2 n$" does not "necessarily flow" from the teachings of Walker because Walker can (and does) use a threshold of one. Therefore, the inference admittedly made by the Examiner does not meet the requirements of the established case law. The Applicant requests that the Examiner provide a basis in fact or technical reasoning that a threshold of "$log_2 n$" necessarily flows from the teachings of Walker, or allow Claim 2.

Regarding Claim 3, the Applicant believes that Claim 3 is allowable for at least the reasons discussed herein with respect to Claim 1 from which it depends.

Regarding Claim 4,

Claim 4 recites:

4. (Original) The method of claim 1 wherein the step of rebalancing the tree data structure further comprises:

(a) developing first and second sets of rebalancing operation tasks, the first set of operation tasks operable to effect a first set of element state transitions and the second set of operation tasks operable to effect a

second set of element state transitions, the first and second set of element state transition being distinct one from the other;

(b) performing the first set of operation tasks in a first phase; and

(c) *performing the second set of operation tasks in a second phase.*

In rejecting Claim 4, the Examiner first states:

> Walker teaches ... developing first and second sets of rebalancing operation tasks, the first set of operation tasks operable to effect a first set of element state transitions and the second set of operation tasks operable to effect a second set of element state transitions, the first and second set of element state transition being distinct one from the other (pg. 4).

The Applicant traverses this statement. The Applicant is unable to identify any teaching within the cited art of "*developing first and second sets of rebalancing operation tasks*" as recited in Claim 4. Specifically, while Walker does teach rebalancing, Walker appears to be silent with regard to "*developing ... tasks*," much less "*first and second sets of ... tasks*," "*operable to effect a first set of element state transitions and ... a second set of element state transitions*." The Applicant, therefore, requests that the Examiner more specifically point out which teaching within Walker is believed to teach development of "*first and second sets of rebalancing operation tasks*," and how these "*first and second sets of rebalancing operation tasks*" are "*operable to effect*" said "*first set of element state transitions,*" or allow Claim 4.

In rejecting Claim 4, the Examiner further states:

> Walker teaches ... performing the first set of operation tasks in a first phase (pg. 4, the first set of operations places the root node of an unbalanced subtree into the subtree with the smaller number of nodes and then pulls up a node to restore balance);

The Applicant traverses this statement. It is unclear to the Applicant how the cited operations could be interpreted as "*rebalancing operation tasks*." For example, the first action cited by the Examiner of placing the root node of an unbalanced subtree into the

subtree with the smaller number of nodes appears to result in *un*balancing rather than balancing. The second action cited by the Examiner as being part of the first set of operation tasks appears to "restore balancing," and, thus, "*a second sets of rebalancing operation tasks*" would not be necessary.

In rejecting Claim 4, the Examiner further states:

> Walker teaches ... performing the second set of operation tasks in a second phase (pg. 4, the second set of operations may be triggered by pulling up a node, requiring shifting at lower levels to account for the moved data.

The Applicant traverses this statement. It is unclear to the applicant how "pulling up a node," is a "*rebalancing operation task*," as recited in Claim 4. For example, the Examiner admits that this action may require "shifting at lower levels to account for the moved data." Thus, the operation results in *un*balancing rather than rebalancing. The Applicant further points out that if the Examiner is suggesting that "shifting at lower levels to account for the moved data" is the second set of operation tasks, then the second set of operation tasks would include a recursive repetition of the suggested first set of operation tasks and thus would not include "*a first set of element state transitions and ... a second set of element state transitions*," "*the first and second set of element state transition being* ***distinct one from the other***," as recited in Claim 4.

Further, it is unclear to the Applicant how the suggested first and second sets of rebalancing operation tasks result in "*a first set of element state transitions and ... a second set of element state transitions*," "*the first and second set of element state transition being distinct one from the other*," as recited in Claim 4. None of the suggested operation tasks appear to result in element state transitions. The Applicant, therefore, requests that the Examiner specifically point out those teachings within Walker

that are thought to teach "*a first set of element state transitions and ... a second set of element state transitions*," or allow Claim 4.

Regarding Claim 5, the Applicant believes that Claim 5 is allowable for at least the same reasons as Claim 1.

Regarding Claim 6, the Applicant believes that Claim 6 is allowable for at least the same reasons as Claim 1 and Claim 2, as well as Claim 5 from which it depends.

Regarding Claim 7, the Applicant believes that Claim 7 is allowable for at least the same reasons as Claim 5 from which it depends.

Regarding Claim 10, the Applicant believes that Claim 10 is allowable for at least the same reasons as Claim 1 and Claim 4.

Regarding Claim 13, the Applicant believes that Claim 13 is allowable for at least the same reasons as Claim 1.

Regarding Claim 17,

Claim 17 recites:

17. (Previously Presented) A method of deferring the rebalancing of a tree data structure comprising the steps of:
(a) tracking the performance of operations upon the tree data structure; and
(c) rebalancing the tree data structure when an unbalanced sub-tree of the tree data structure reaches a threshold level greater than one, the rebalancing further comprising creating a first set of rebalancing operation tasks, the first set of rebalancing operation tasks being characterized by navigation of the tree data structure using at least an existing link, creating a second set of rebalancing operation tasks, the second set of rebalancing operation tasks being different from the first set of rebalancing operation tasks and being characterized by location of elements within the tree data structure using at least one pointer external to the tree data structure and created by the first set of rebalancing operation tasks, and performing at least one operation task of the first set of rebalancing operation tasks in a first phase and at least one of the second set of rebalancing operation tasks in a second phase.

The Applicant believes that Claim 17 is allowable for at least the reasons discussed herein with respect to Claim 1 and Claim 4.

Further, in rejecting Claim 17 the Examiner states:

> the process of rebalancing using existing pointers in a first phase and external pointers in a second phase is a well-known technique, which any person having ordinary skill in the art would be able to implement ... For example, Nilsson ("Balanced Binary Tree Algorithm") describes creating an ordered array from an unbalanced tree and then translating the ordered array into a balanced binary tree.

The Applicant traverses this statement. First the Examiner has not established that Nilsson is prior art under § 103. While the Examiner suggests that this reference is published in October 2001, the only dates on the reference are a copyright notice "1998-2005." Thus, any part of the reference depended on by the Examiner may have been published as late as December 2005. Further, the filing date of the current application is October 11, 2001. Even accepting the Examiner's suggestion that Nilsson was published in "October 2001," it is likely that Nilsson was published after the filing date. As such, it cannot be used to establish the knowledge of a person of ordinary skill in the art on the filing date. The Applicant, therefore, requests that the Examiner show that Nilsson is prior art to the pending application or withdraw the rejection of Claim 17.

Second, Nilsson does not appear to teach "rebalancing using existing pointers in a first phase and external pointers in a second phase" as suggested by the Examiner. Rather, Nillsson appears to teach rebalancing using only internal pointers in a single phase. The Applicant specifically requests that the Examiner specifically point out how Nilsson teaches "*creating a second set of rebalancing operation tasks, the second set of rebalancing operation tasks being different from the first set of rebalancing operation tasks and being characterized by location of elements within the tree data structure using*

at least ***one pointer external to the tree data structure*** *and* ***created by the first set of rebalancing operation tasks***," (emphasis added), with particular attention to those limitations shown in bold, or allow Claim 17.

Applicant believes that all pending claims are allowable and respectfully requests that the Examiner issue a Notice of Allowance. Should the Examiner have questions, the Applicant's undersigned representative may be reached at the number provided.

Respectfully submitted,

Clifford L. Hersh

Date: June 13, 2005

Steven M. Colby, Ph.D. Reg. No. 50,250
Carr & Ferrell *LLP*
2200 Geng Rd.
Palo Alto, CA 94303
Phone (650) 812-3424
Fax (650) 812-3444